

CLAIMS

What is claimed is:

1. A spin pack assembly for spunbond production for constructing spunbond fabrics and laminates, composed of  
5 bicomponent filaments comprising:

a spinneret for generating bicomponent filaments;

at least one distribution plate for distributing a first polymer and a second polymer mounted on top of said spinneret;

10 a spin pack housing including a first chamber for receiving said first polymer and a second independent chamber for receiving said second polymer;

means mounted in said first chamber to provide first polymer diversion along and within said first polymer chamber;

15 and

means mounted in said spin pack second chamber for providing diversion along said second chamber of said second polymer, said spin pack housing being connected to said distribution plates for receiving said first polymer and said  
20 second polymer independently.

2. A spin pack assembly as in claim 1, including:

means for maintaining a uniform pressure of said first polymer in said spin pack housing first chamber and said  
25 spin pack housing second chamber for providing uniform

distribution of said first polymer and said second polymer to said distribution plates throughout the entire volume of the spin pack housing first chamber and said second chamber.

5           3.    A spin pack assembly as in claim 1, including:

                  a polymer filter screen being mounted between the outlet of said spin pack housing first chamber and said spin pack housing second chamber and said distribution plates, filtering said first polymer and said second polymer before the  
10 first polymer and second polymer reach said distribution plates.

                  4.    A spin pack assembly as in claim 1, wherein:

                  said means for diversion of said first polymer in  
15 said first spin pack housing chamber and said second polymer in said second spin pack chamber includes a first block that is rigid and occupies a significant amount of volume in said first chamber, said block having a flat upper surface and a tapered bottom surface, said block being sized in length to occupy a  
20 substantial portion of the spin pack assembly first chamber length, and being sized in width to allow spacing on each side of said block to permit said first polymer to flow over and along the sides of said block, and said block having a base portion that is substantially tapered to allow the flow of

polymer around the base of said block for uniform distribution of said polymer.

5. A spin pack assembly as in claim 4, wherein:

5 the diversion block is sized and shaped to occupy a particular volume of said spin pack housing first chamber and said spin pack housing second chamber to maintain substantially the same molten first and second polymer pressures in each of said first and second chambers consistently for uniform  
10 distribution of said first polymer and said second polymer to said filter screen and said distribution plates.

6. A spin pack assembly as in claim 1, including:

means for maintaining a uniform pressure of said  
15 first polymer and uniform temperature and volume of said first polymer in said spin pack housing first chamber throughout the length of said spin pack housing first chamber.

7. A spin pack assembly as in claim 1, including:

20 a first polymer inlet means connected to said spin pack housing first chamber for admitting said first polymer under pressure in a molten state to said spin pack housing first chamber and a second inlet means for admitting said second polymer into said spin pack housing second chamber  
25 melted under a predetermined pressure.

8. A spin pack housing for spunbond production for constructing spunbond fabrics or laminates composed of bicomponent filaments for use in a spin pack assembly that  
5 includes a spinneret and bicomponent first and second polymer distribution plates and a polymer filter comprising:

a rigid, elongated member having a first elongated chamber and a second elongated chamber, the length of said housing being substantially in a ratio of greater than 20 to 1,  
10 length to width, of said housing, said body being substantially a rectangular polyhedron having length, width, and height, said body first chamber and said body second chamber being disposed substantially along the length of said body and being substantially equal in volume; and

15 a first polymer diversion block for diverting molten polymer mounted in said body first chamber, disposed along the length of said first chamber and occupying a significant volume of said first chamber, said first diversion block being sized in width relative to the width of said body first chamber to  
20 allow polymer to flow on each side downwardly and being sized and shaped to insure that polymer within said first chamber is maintained at a uniform pressure along the length of said first chamber.

9. A spin pack housing as in claim 8, wherein:

5 said diversion block has a cross-section that includes a flat top portion, parallel vertical sidewalls at 90 degrees to said flat top portion, and a base portion that is a truncated trapezoid, the cross-sectional size and shape being allowed to have first polymer flow around said body downwardly for uniform distribution to the distribution plates below said housing.

10 10. The method of providing a uniform distribution of polymer flow to insure uniform fabric filaments in thickness and weight in spunbond production for constructing spunbond fabrics and laminates composed of bicomponent filters, comprising the steps of:

15 (a) providing a spinneret that receives first and second polymers in a molten state for creating bicomponent filaments;

(b) mounting one or more distribution plates to said spinneret for distributing a first polymer and a second polymer  
20 to said spinneret to produce a bicomponent filament in said spinneret;

(c) providing a spin pack housing having a first polymer chamber and a second polymer chamber, having a first polymer outlet and a second polymer outlet in a molten state  
25 connected to the input of said distribution plate; and

(d) providing a first polymer diversion block in said spin pack housing first chamber and a second polymer diversion block in said spin pack housing second chamber for diverting the flow of the first polymer and the second polymer within the first and second chambers, respectively, to maintain a constant pressure of said first polymer in said first chamber and said second polymer in said second chamber throughout the length of said housing first and second chambers.

11. The method of claim 10, comprising:

(e) maintaining a substantially uniform pressure of said molten first polymer in said spin pack housing first chamber throughout the entire volume of said first chamber and the outlet of the first chamber; and

(f) maintaining a constant and substantially uniform pressure of said molten second polymer in said spin pack housing second chamber throughout the length and volume of said second chamber and at the outlet of said second chamber.

12. The method of claim 11, including the step of:

(g) filtering said first polymer and said second polymer as it leaves said spin pack housing first chamber and said spin pack housing second chamber.

13. The method of claim 12, including the step of:

(h) providing a large-scale spin pack having a length-to-width ratio of greater than 20 to 1 for use with a large number of filament holes in a spinneret of up to 10,000 5 per meter.